*Tele*Eye RX Series

Mobile Video Recording Server

RX504

User Guide

TeleEye

www.TeleEye.com

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Release Version 1.1

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Section 1

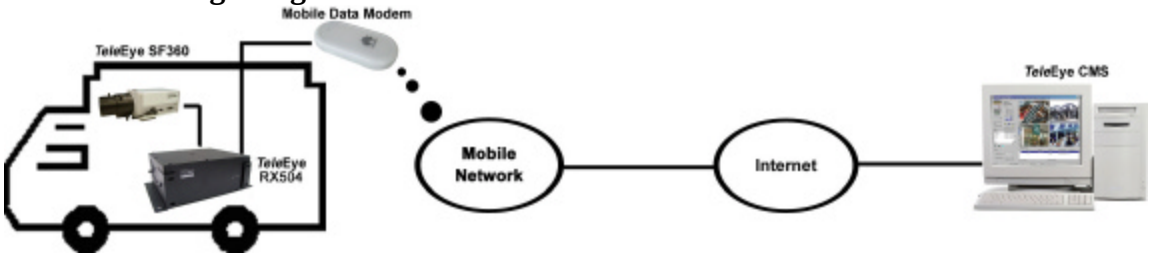
Introduction

1. Introduction

***Tele*Eye** RX504 is a robust video recording server designed for fleet security applications. By using the award-winning SMAC-M multi-streaming video compression technology, ***Tele*Eye** RX504 delivers no compromise performance on simultaneous recording and transmission via mobile network.

***Tele*Eye** RX504 can continuously record videos of every single detail during the vehicle in service. By connecting ***Tele*Eye** RX504 to a mobile data modem, the driver can push a button to trigger the ***Tele*Eye** RX504 to send an alarm and seamless video back to the central monitoring station via mobile networks such as HSDPA, UMTS, EDGE or GPRS in an emergency situation. In conjunction to a WiFi gateway, the recorded data can be reviewed and extracted to the central storage server via a WiFi network after the vehicle returning back to the depot.

Live monitoring using mobile network



Video extraction and playback via WiFi

2. Features

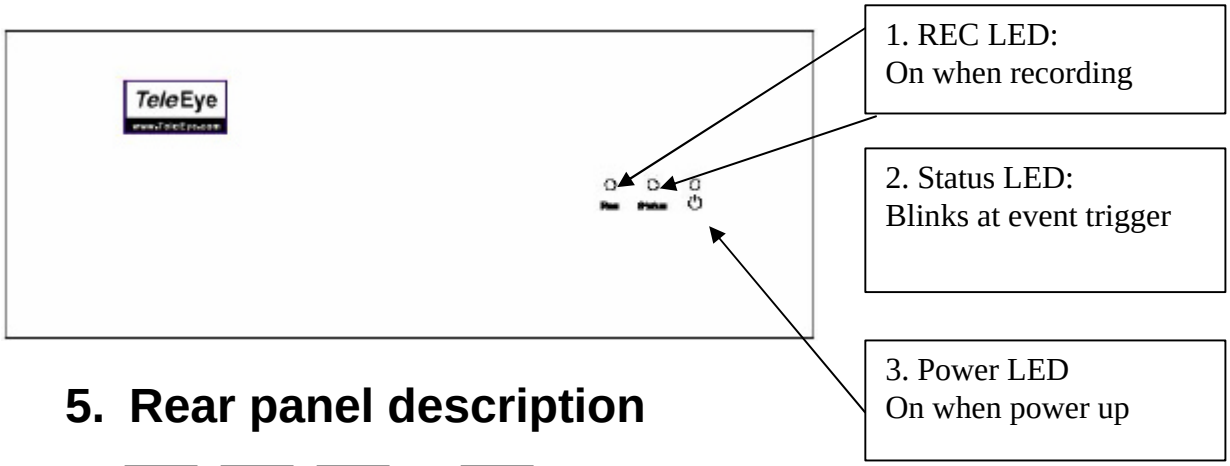
- 4 video, 16 alarm inputs; 4 relay outputs
- Recording up to 25/30fps on D1; 100/120fps on CIF resolution
- Live monitoring via HSDPA, UMTS, EDGE and GPRS (require mobile data modem)
- Playback and video extraction via WiFi (require WiFi gateway)
- Fast detachment and shock protection design

3. Package contents

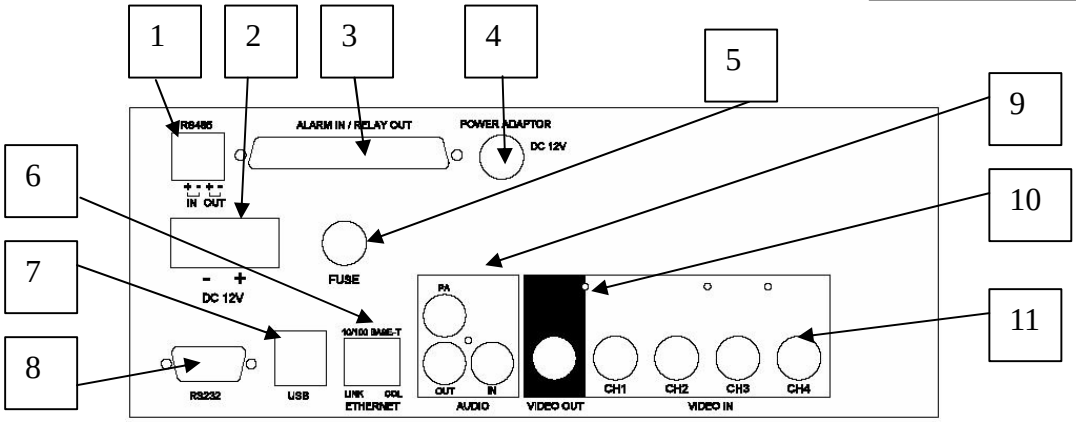
1. ***Tele*Eye** RX504
2. NULL modem cable C03FF
3. WX-30 installation CD version 3.10.04
4. Hard disk mounting screws with rings

5. User manual
6. Hard disk recommendation list
7. Warranty card
8. Registration card
9. R-E220 mobile data modem (optional)
10. Wireless LAN adaptor (optional)
11. Vibration bracket (optional)

4. Front panel description



5. Rear panel description



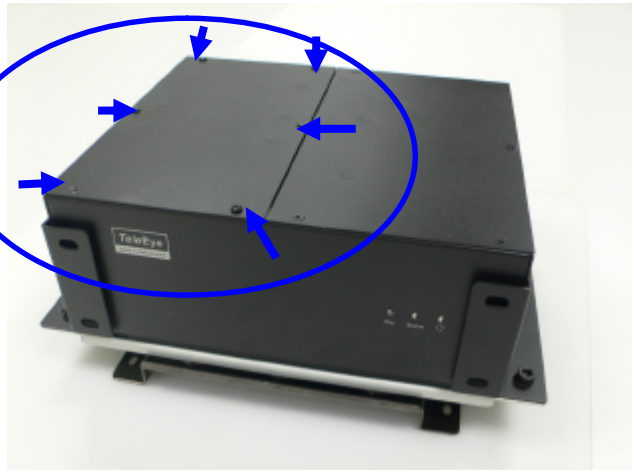
Item	Description
1. RS-485 (IN / OUT)	For telemetry use
2. Power terminal	Connect to input power (10-24V DC)
3. Alarm IN Relay Out	External alarm input and relay output
4. Power adaptor	*Reserved*
5. FUSE	3Amp protection fuse socket
6. Ethernet	RJ45 socket for network connection
7. USB	For connecting 3G USB modem
8. RS-232	Connect NULL modem cable for setup use
9. Audio	*Reserved*
10. Video Out	Video output BNC type connector
11. Video In	Video input BNC connectors

Section 2

Installation

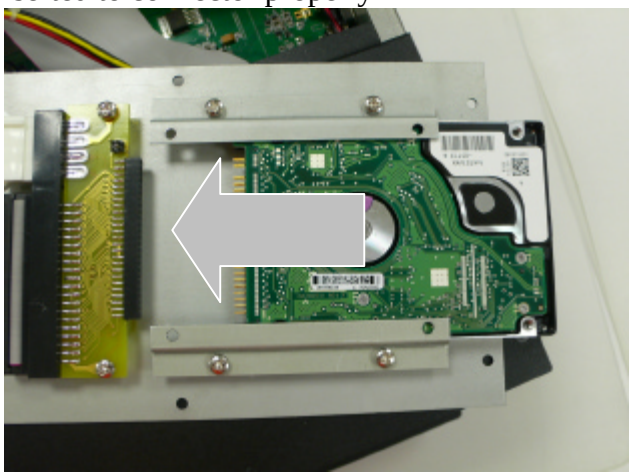
1. Install Hard Disk

1. Remove left cover screw

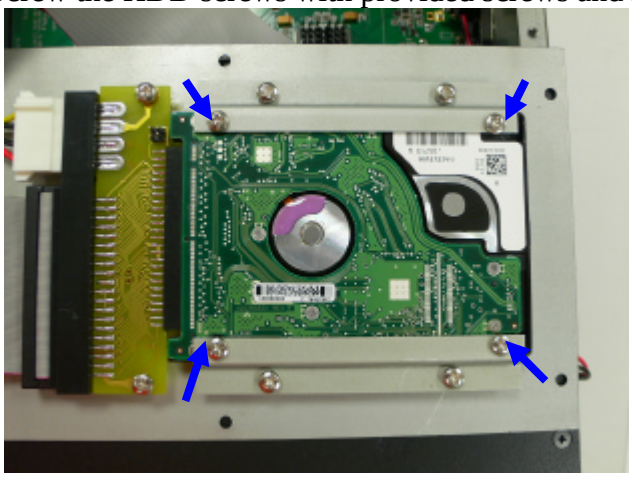


2. Turn the left cover over

3. Slide the HDD into the slot. Take care for the hard disk pins, make sure all pins be inserted to connector properly



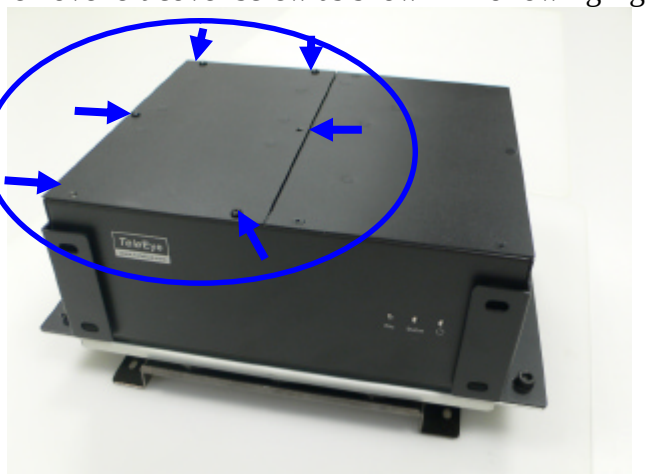
4. Screw the HDD screws with provided screws and rings.



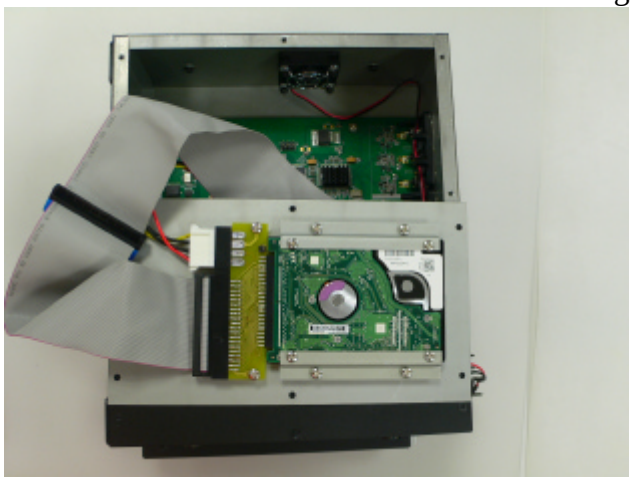
5. Restore and screw up the left cover

2. Remove Hard Disk

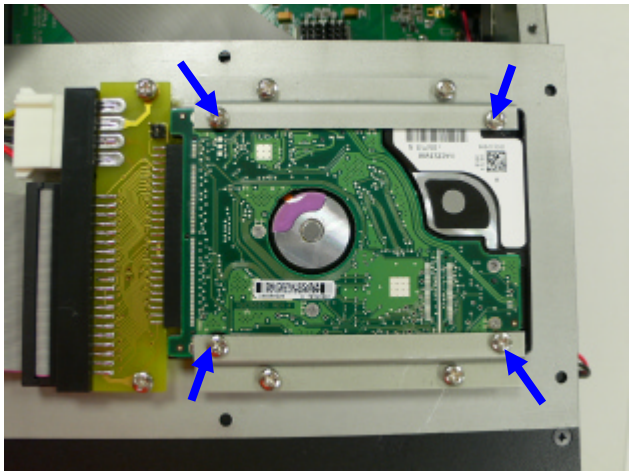
1. Remove left cover screw as shown in following figure



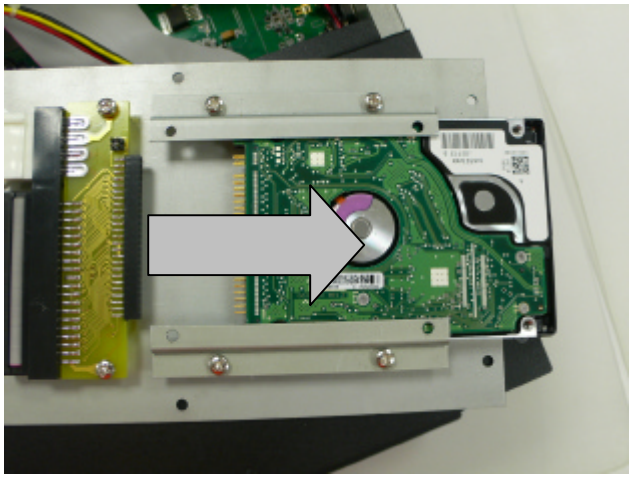
2. Turn the left cover over as shown in the following figure



3. Remove HDD screws

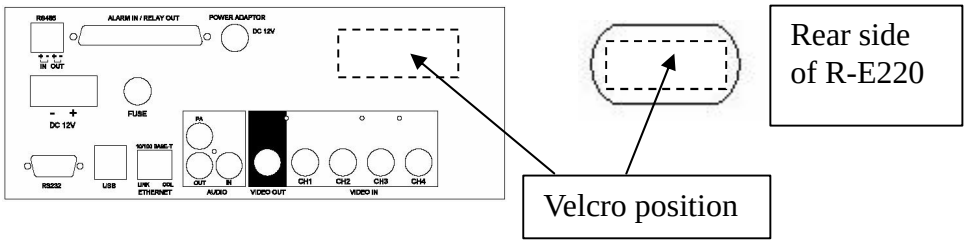


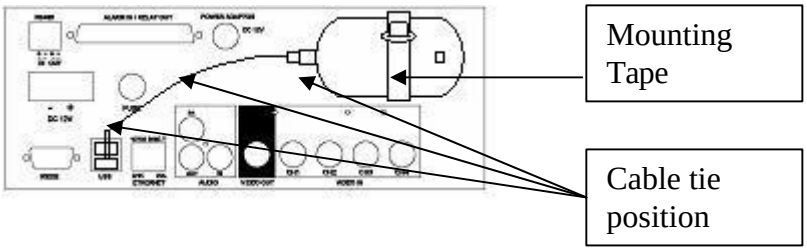
4. Slide the Hard disk out



3. Mobile data modem installation

1. Stick provided Velcro to R-E220 and RX504's rear panel, then stick together as following figure:

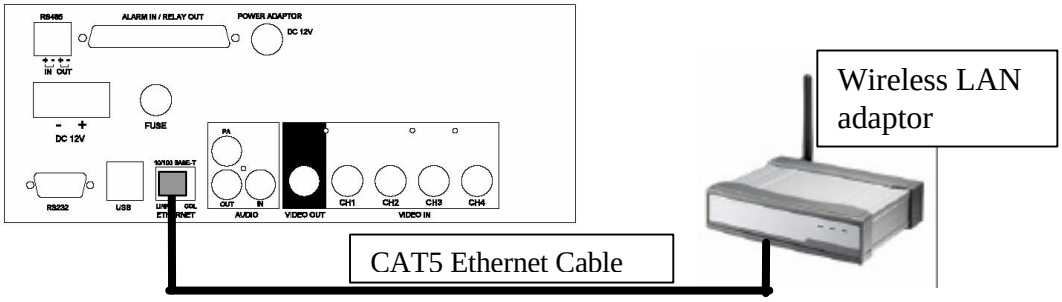




2. Tighten the mounting tape at RX504 real panel
3. Use provided cable tie to fix USB cable on RX504's rear panel

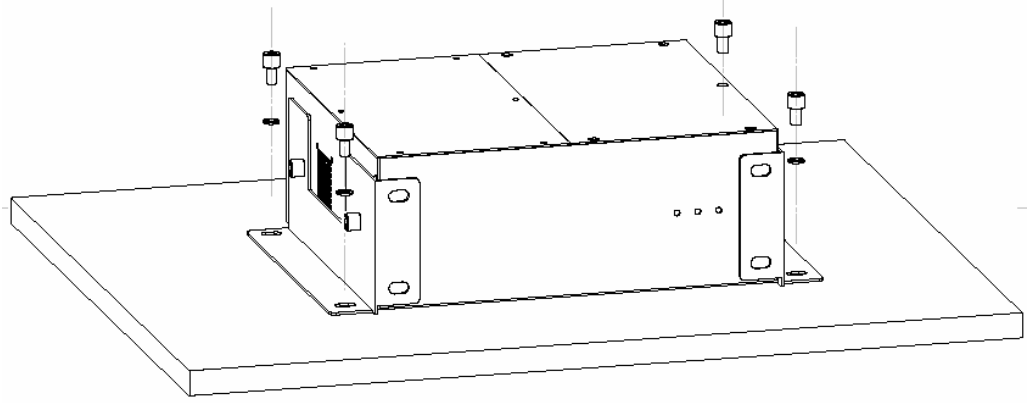
4. Wireless LAN adaptor installation

1. Only use Wireless LAN Client with CAT5 cable interface, connect the Wireless Client to RX504's Ethernet socket.

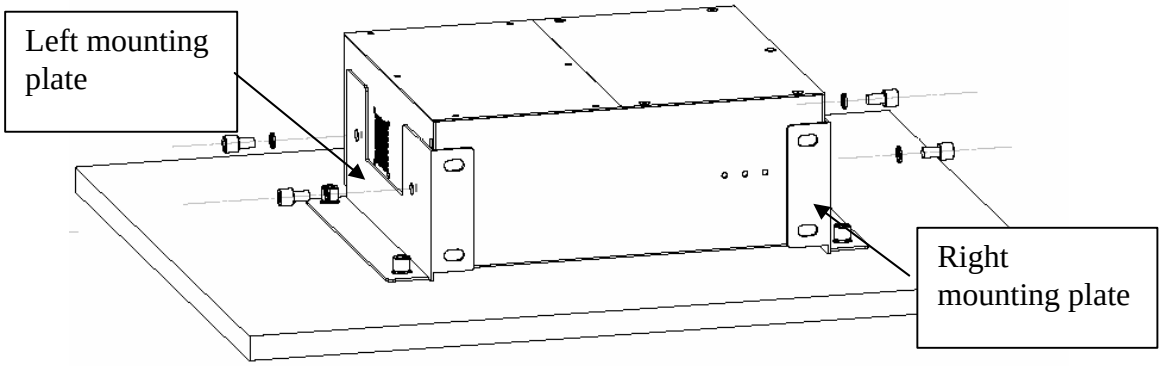


5. Mount to vehicle

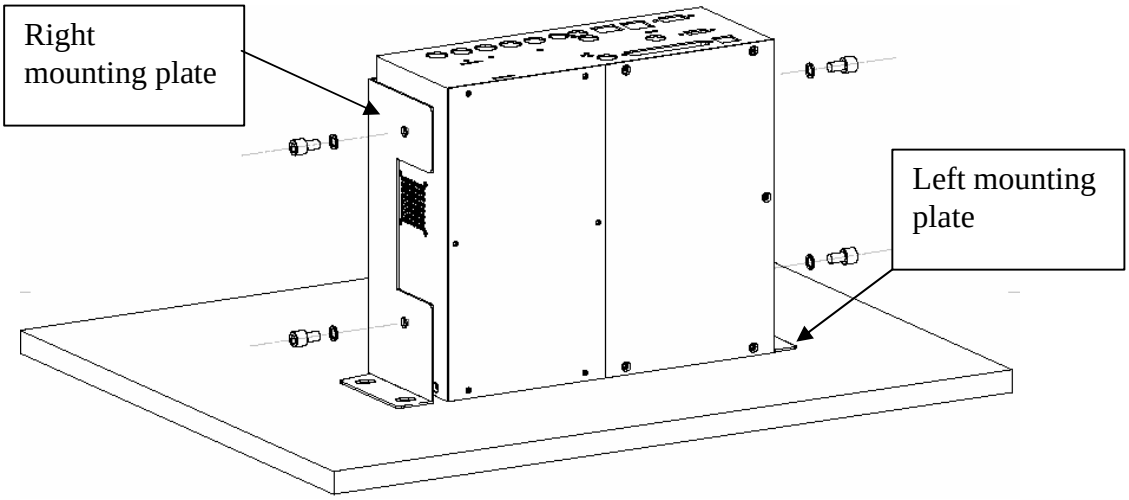
1. Horizontal mount
   i. Measure the position of the mounting screws and drill holes on the mounting surface
   ii. Screw up the screws on the mounting surface



2. Vertical mount
   i. Remove four side mounting screws on RX504 as shown follow



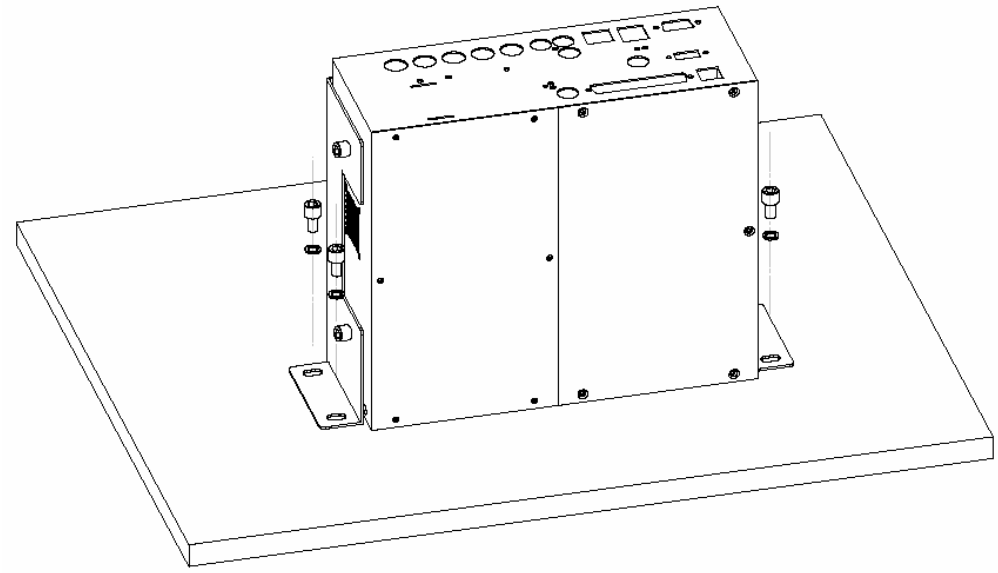
ii. Switch left and right mounting plate as shown in the following figure



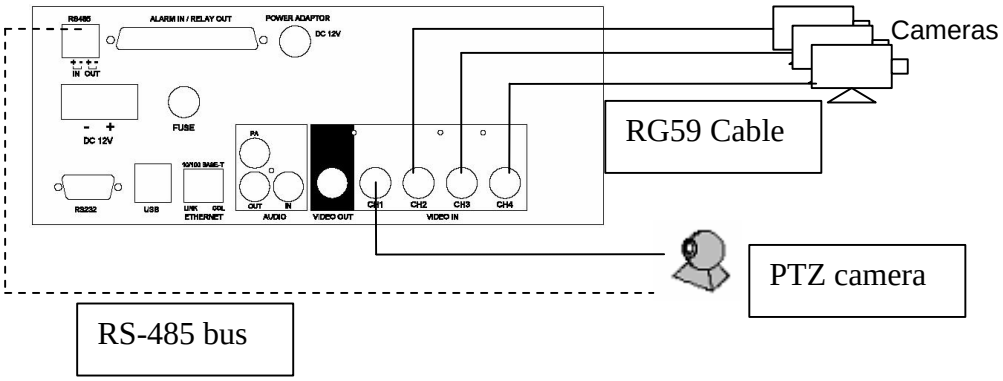
iii. Rotate to RX504 front panel face down and screw up the side mounting screw to RX504

iv. Measure the position of the mounting screws and drill holes on the mounting surface

v. Screw up the screws on the mounting surface



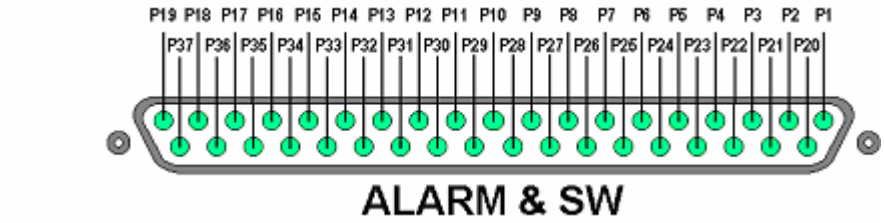
6. Video installation



For fix cameras, connect cameras to video inputs using RG59 cable. For PTZ cameras, connect camera's video output to RX504's video input using RG59 cable, and connect RS-485 to RX504's RS-485 out.

7. Alarm installation

***Tele*Eye RX** supports up to 16 alarm ports in that order with tamper detection for connecting with alarm sensors, 4 additional input sensors and 4 relay ports for control. The definitions of alarm and relay control ports are shown in the following diagram.



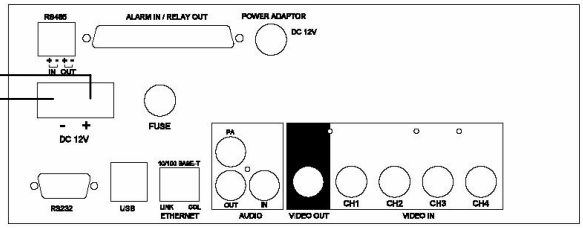
Pin assignment for *TeleEye* RX

Pin 1	ALARM 1	Pin 20	GND
Pin 2	ALARM 2	Pin 21	GND
Pin 3	ALARM 3	Pin 22	GND
Pin 4	ALARM 4	Pin 23	GND
Pin 5	ALARM 5	Pin 24	GND
Pin 6	ALARM 6	Pin 25	GND
Pin 7	ALARM 7	Pin 26	GND
Pin 8	ALARM 8	Pin 27	GND
Pin 9	ALARM 9	Pin 28	ARM/DISARM
Pin 10	ALARM 10	Pin 29	SECURITY SWITCH
Pin 11	ALARM 11	Pin 30	POWER FAILURE
Pin 12	ALARM 12	Pin 31	SYSTEM TAMPER
Pin 13	ALARM 13	Pin 32	ALARM 14
Pin 14	ALARM 15	Pin 33	ALARM 16
Pin 15	RELAY 0a	Pin 34	RELAY 0b
Pin 16	RELAY 1a	Pin 35	RELAY 1b
Pin 17	RELAY 2a	Pin 36	RELAY 2b
Pin 18	RELAY 3a	Pin 37	RELAY 3b
Pin 19	N/A		

8. Power connection

Connect to the +12 V power terminal which is energized in the accessory position of the ignition key. Be sure to connect the Ground first

Connect to ground



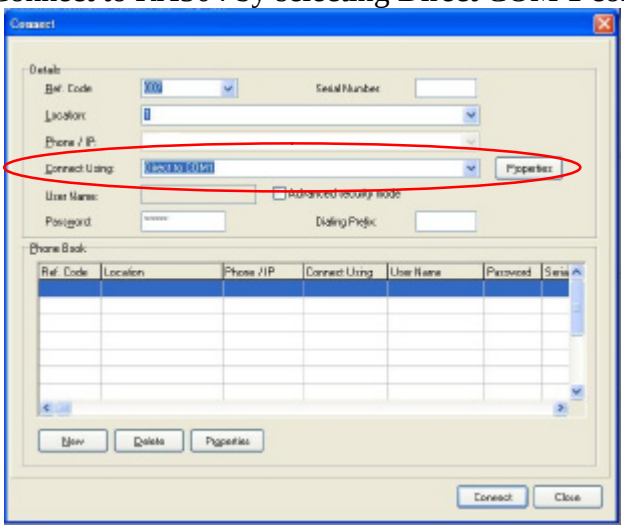
1. Connect RX504 Ground terminal to car ground.
2. Connect RX504 +12 V terminal to the +12 V power terminal which is energized in the accessory position of the ignition key.

Section 3

Basic Setup

1. Before setup

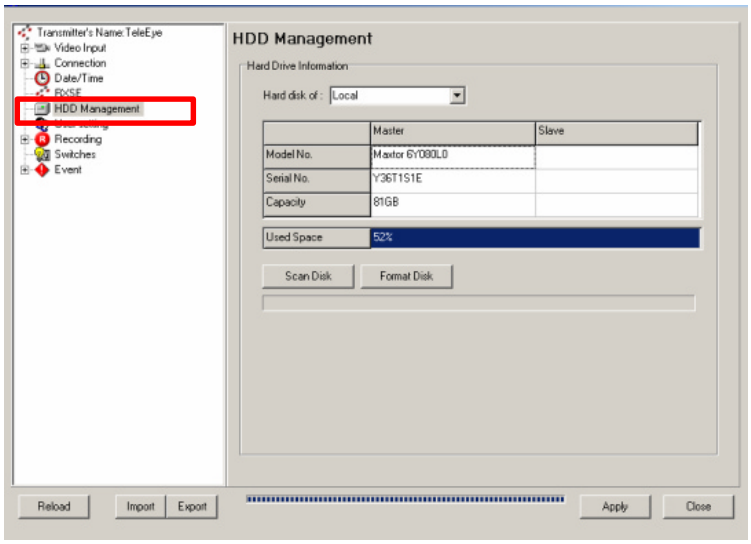
1. Prepare a Laptop with COM port which running Windows XP
2. Install provided ***Tele*Eye** WX-30 software
3. Power up RX504
4. Connect RX504 to PC by using provided NULL modem cable
5. Run ***Tele*Eye** WX-30
6. Click Connections > Connect
7. Click Properties, select 57600 bit rate
8. Connect to RX504 by selecting Direct COM 1 connection



2. Format Hard Disk

New Hard Disk need to be formatted before use.

1. Click **Transmitter** -> **Settings**
2. Click **[HDD Management]** option on **{Transmitter Setup}** panel to enter **{HDD Management}** panel.

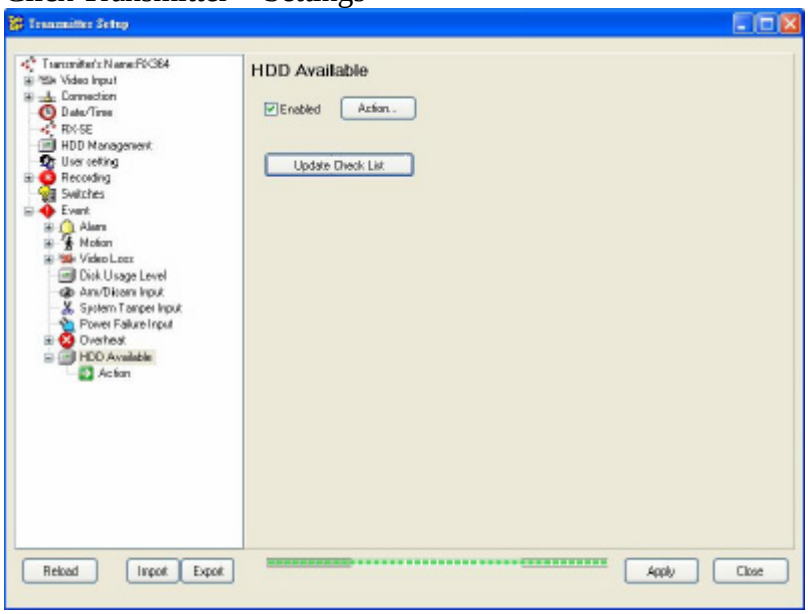


3. Click **[Format Disk]** to start format the Hard Disk.
4. RX504 will need to restart after Hard Disk format.

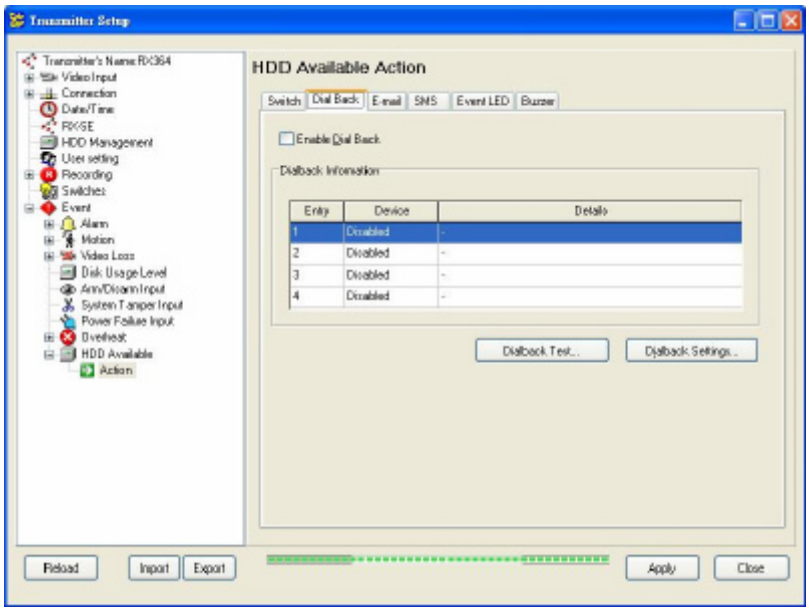
3. Hard Disk available event

Hard Disk available event triggers when any HDD failure or HDD changes happen. It is recommended to enable this event after format Hard Disk. Like other events, it can associate with dialback, E-mail and buzzer action etc.

1. Click Transmitter > Settings



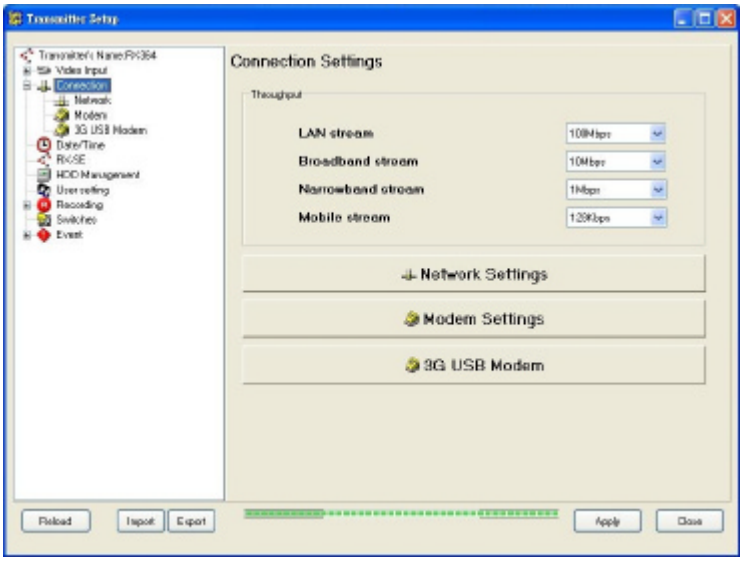
2. Click Event > HDD Available
3. Check Enable
4. Click Action



5. Setup desired action in this panel, for details please refer to WX-30 User manual.
6. Click **[Update Check List]** after change or format Hard Disk.

4. Network setup

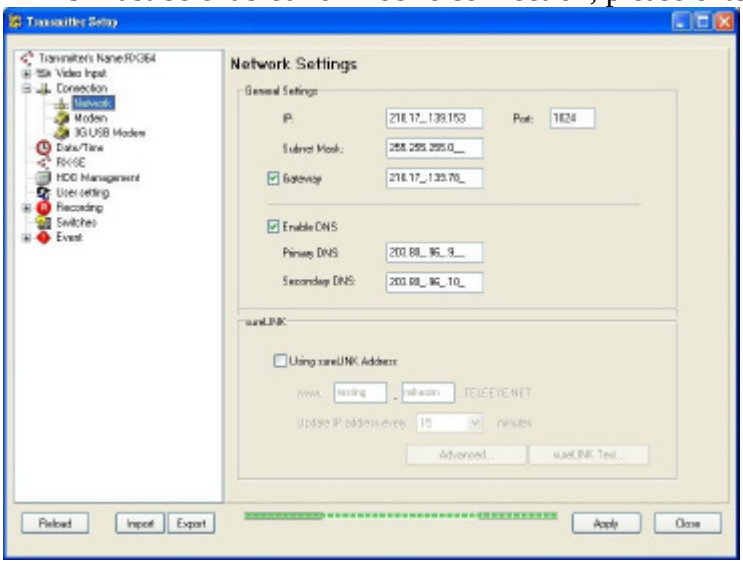
1. Click Transmitter > Settings
2. Click Connection



3. Throughput setting is used to limit RX504's output data rate at individual video stream.
4. Select 100Mbps for LAN stream
5. Narrowband throughput, following are suggested initial throughput for reference only.
   - HSDPA / UMTS: 512kbps
   - EDGE: 64kbps
   - GPRS: 19.2kbps

   Noted that mobile data rate varies with different environment. If video delayed, please select lower throughput.
6. Click Network Settings

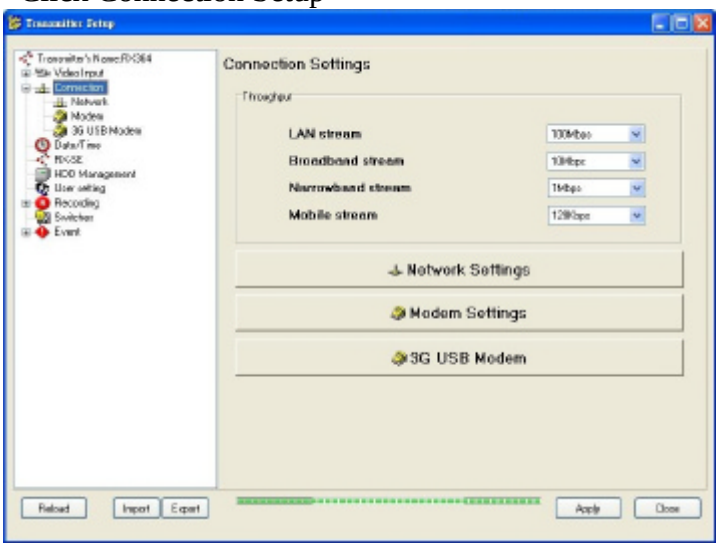
7. Set IP, port, subnet mask and gateway
8. DNS must be enabled for mobile connection, please enter valid DNS addresses.



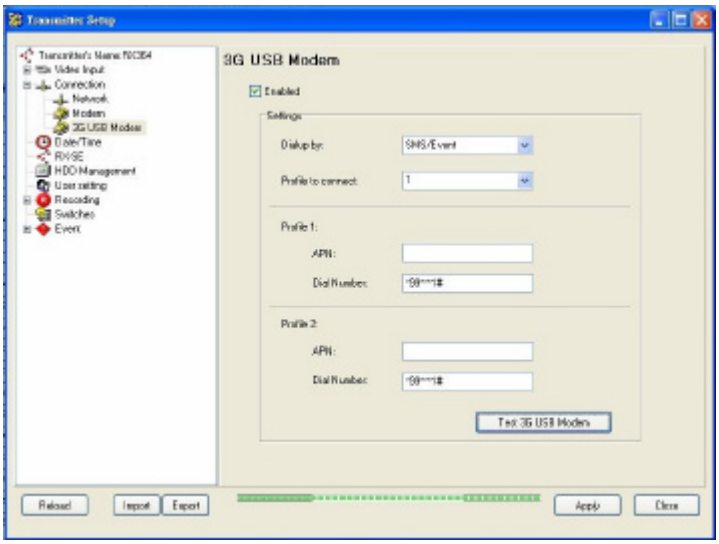
5. Mobile data modem setup

Make sure the mobile service provider support streaming at Internet connection.

1. Click Connection Setup



2. Click 3G USB Modem



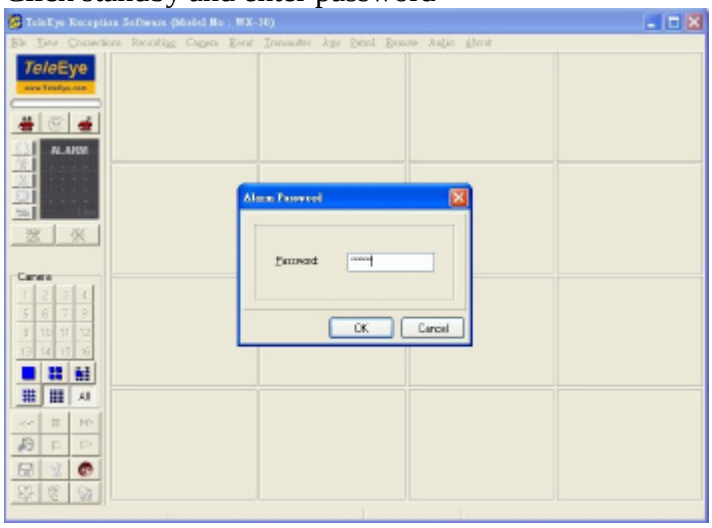
3. Click enable
4. Set dialup mode: Start up and SMS / Event
    1. In SMS / Event mode, RX504 will dial up to Internet only when event trigger a dialback action or receive a valid dialback SMS message. This mode is recommended to user who do not has real IP for mobile network connection
    2. Startup mode will dial up to Internet when RX504 power up. This mode is only suitable for user who has real IP for mobile network connection.
5. RX504 support 2 profiles, select desired profile according to the SIM card.
6. Enter APN and dial number of the SIM card, according to telecom service provider's setting
7. Click Test 3G USB Modem to test the configuration
8. Click Apply to save settings

Section 4

Operation

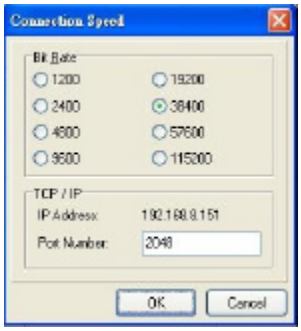
1. Live operation through mobile data modem

1. SMS / Event mode
    1. Run ***Tele*Eye** WX-30
    2. Click standby and enter password

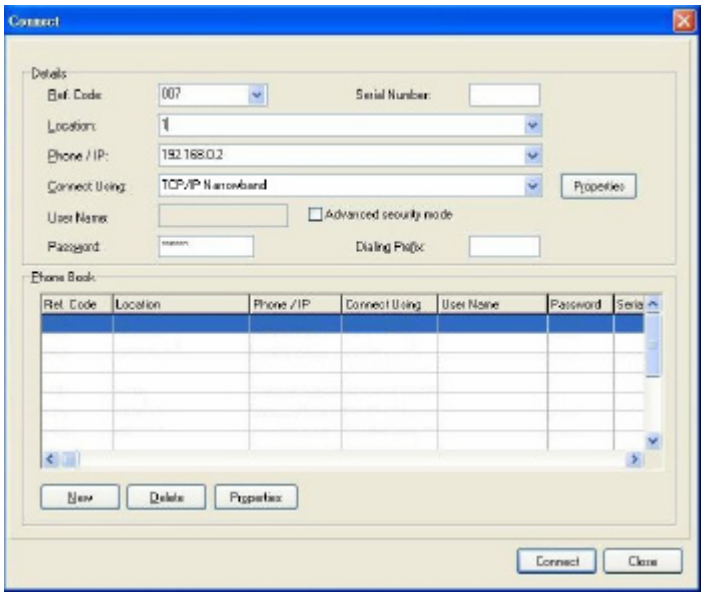


    3. Select Narrowband

    4. Click … button and set listen port



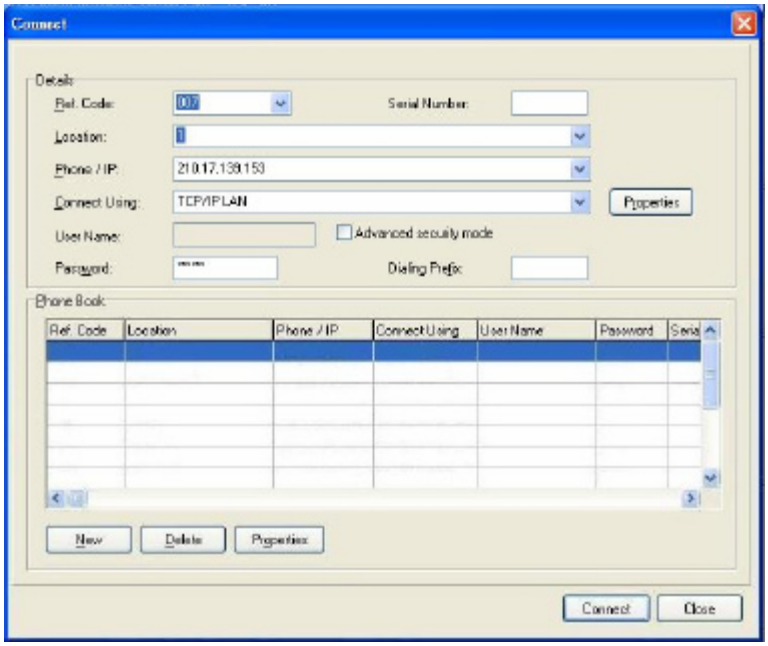
    5. Click OK
    6. Send SMS to the SIM card's number using the following format:
    7. teip<space><dialback ip><space><port><space>endip
       e.g. teip 202.73.90.90 2048 endip
    8. RX504 will dialback to the given IP once received the SMS.
2. Startup mode
    1. Run ***Tele*Eye** WX-30
    2. Click connect



3. Enter ***sure*LINK** address or IP address
4. Select TCP/IP Narrowband
5. Enter password
6. Click Connect

2. Live operation through LAN / wireless LAN

1. Run ***Tele*Eye** WX-30
2. Click connect

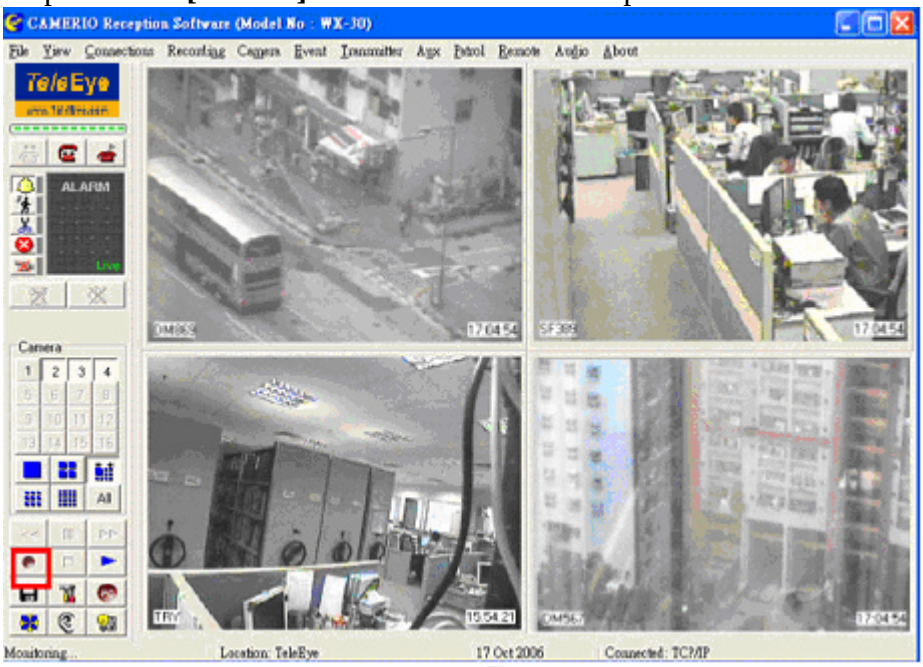


3. type ***sure*LINK** address or IP address
4. Select TCP/IP LAN
5. Enter password
6. Click Connect

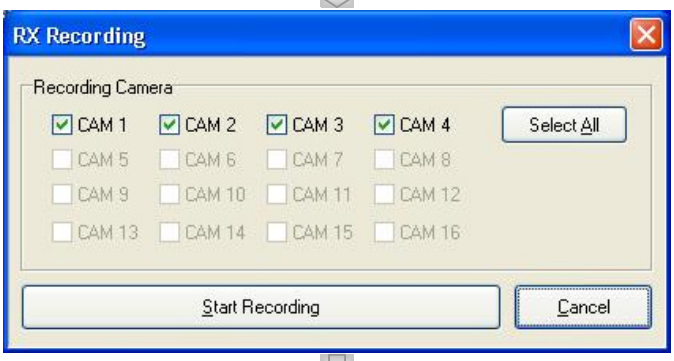
3. Recording

Manual Recording Procedure :

Step 1 : Click **[Record]**  icon on the main panel as shown follow.



Step 2 : Enter the administrator password.



Step 3 : **{RX Recording}** panel pop up. Click the checkbox to select the camera for recording. **[Select All]** is to select all cameras for recording.

Step 4 : Press **[Start Recording]** to start recording now.

4. Video extraction

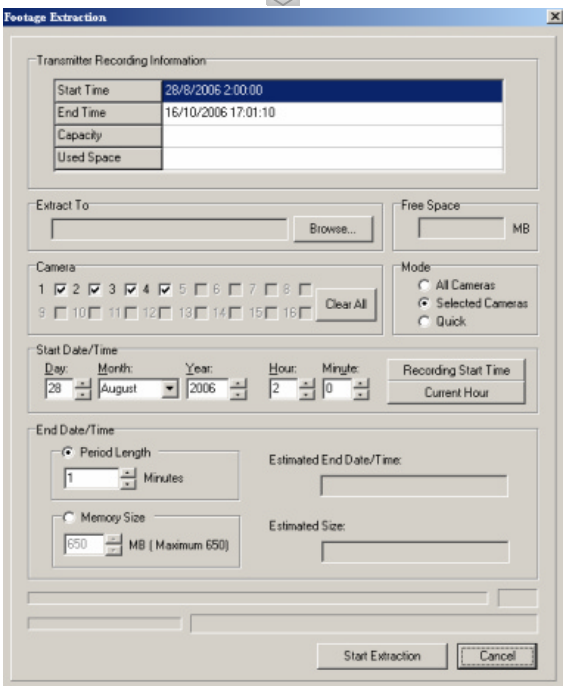
Extract footage for back up purpose. This function can back up the data stored in the transmitter into local hard disk. User only need to select the amount of memory and starting time for back up and the function will calculate the end time automatically.

It is recommended to use LAN / wireless LAN connection to achieve maximum extraction speed. See Section 4.2.

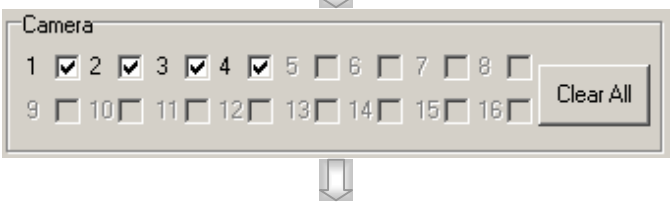
Step 1: Click **[Transmitter]** > **[Setup]** > **[recording]**

Step 2: Click on **[Footage Extraction]** button

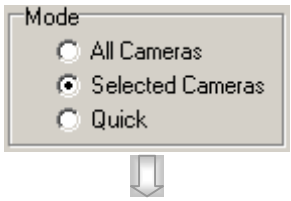
Step 3 : **{Administrator Password}** panel will pop up. Input the administrator password and click **[OK]**.



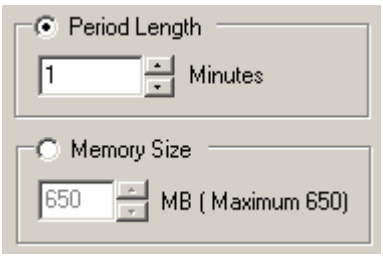
Step 4 : **{Footage Extraction}** panel will pop up. Click **[Browse…]** to choose a folder for extraction.

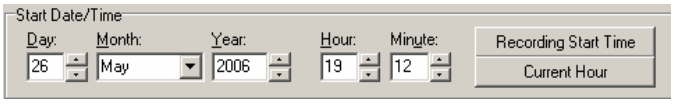


Step 5: In **{Footage Extraction}** panel, select camera(s) for footage extraction.

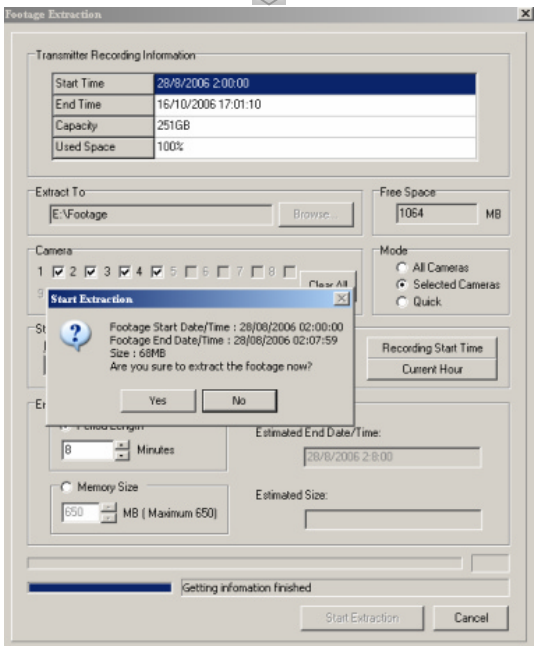


Step 6: Select mode for footage extraction.
Note: Lower frame rate for quick mode.

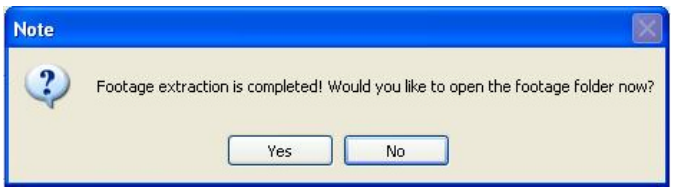




Step 7 : Input Start Date / Time and Period Length / Footage Size in the boxes provided.
(Note(Optional):
1. Click **[Recording Start Time]** to select start time of the recording log.
2. Click **[Current Hour]** to select current hour of the transmitter.)
Click **[Start Extraction]** to start.



Step 8 : A **{Format}** panel will pop up. Click **[Yes]** to continue



Step 9 : When the extraction is finished, **{Note}** will pop up. Click **[Yes]** or **[No]** to choose open the footage folder or not.

☞ Backup will not be successful if --
1. Two sites carrying out backup process in the remote site at the same time.
2. Recording retention process carrying out at the same time.

Appendix 1

Limited Warranty

Conditions, Limitations and Liabilities of This Warranty:

1. Signal Communications Ltd. (hereinafter called ***Tele*Eye**) provides free repairing labour and free repairing parts for the first 12 months. Please present the Warranty Card and the original invoice when you are asking for service support.
2. In case of applicable, ***Tele*Eye** staff shall request a remote access inspection or trouble shooting through internet, PSTN, ISDN, or mobile media.
3. When service is required, the Customer is responsible for all the transportation costs.
4. Outdoor services are not included. Subject to ***Tele*Eye**, outdoor services will be provided at extra charges.
5. This warranty does not extend to cover any damages or malfunction resulting from disaster, environmental factor, abnormal humidity/temperature, improper voltage, electrostatic discharge, misuse, negligence, ignorance, accident, mold, or repairs /modifications made by any person(s) other than the authorized personnel of ***Tele*Eye**.
6. ***Tele*Eye** reserves the right to charge Customer an inspection fee, on-site service fee or cost of parts if (i) no fault in the equipment can be found during inspection or (ii) the defect is caused at conditions those mentioned in point 5 above or (iii) Customer fail in providing access methods to the site or the equipment, e.g. specified access permit or key. Such determination is up to the sole discretion of ***Tele*Eye**.
7. The warranty is void if any of the cabinet seal has been removed or opened if there is any such sign not being made by any authorized personnel of ***Tele*Eye**.
8. Under no circumstance shall ***Tele*Eye** be liable for any damages to any parties so caused by the usage of the above specified equipment or so caused during service provision.
9. The conditions, limitations and liabilities of this warranty card may be extended to further terms and conditions or superseded by other terms and conditions when otherwise specified on any of the products.
10. Customer shall be responsible for backing up the data contained in the disk products.
11. ***Tele*Eye** shall have no responsibility arising out of any damage to, or loss of the data contained in the disk products.
12. All the above determinations are up to the sole discretion of ***Tele*Eye**.

Appendix 2

***sure*LINK Technology**

***sure*LINK** technology is available in ***Tele*Eye RX**, which enables you to connect to the ***Tele*Eye RX** with broadband dynamic IP Internet connection. If you can only use broadband dial-up account to connect to the Internet through your computer, ***sure*LINK** provides a solution for sharing the Internet connection between your computer and the ***Tele*Eye RX**.

***sure*LINK** is a group of additional functions, services and software provided for the ***Tele*Eye RX** so as to make it connect to the Internet in any connection methods. Such function can only be used if you have applied for this service. After you have done so, you also need to configure the ***Tele*Eye RX** to make ***sure*LINK** available. This section will help you to configure and use it.

By using of ***sure*LINK** technology, the powerful ***Tele*Eye RX** can work on broadband Internet economically. You can perform a cost effective and convenient remote live video monitoring anytime and anywhere.

***sure*LINK Address**

You can apply for a ***sure*LINK** address (domain name), such as *www.hkpublic.teleeye.teleeye.net*, for your ***Tele*Eye RX**. You can use this name to login or browse the built-in web server **. One of the advantages is that you are not required to memorize the IP address (e.g. 210.177.50.156) of the ***Tele*Eye RX**. Since the ***sure*LINK** address is fixed while the IP address may change periodically (in case when dynamic IP is used), you do not need to worry about the expiration of the IP address. The ***sure*LINK** address can also be used in ***Tele*Eye RX** web browsing to see live video on standard web browser (e.g. IE, Netscape).

Refreshing Rate

When ***sure*LINK** address feature is enabled, the ***Tele*Eye RX** will periodically update its current IP address to our database to ensure that the ***sure*LINK** address is always forwarded to a valid IP. You can set this update period through WX-30 software.

DNS Services:

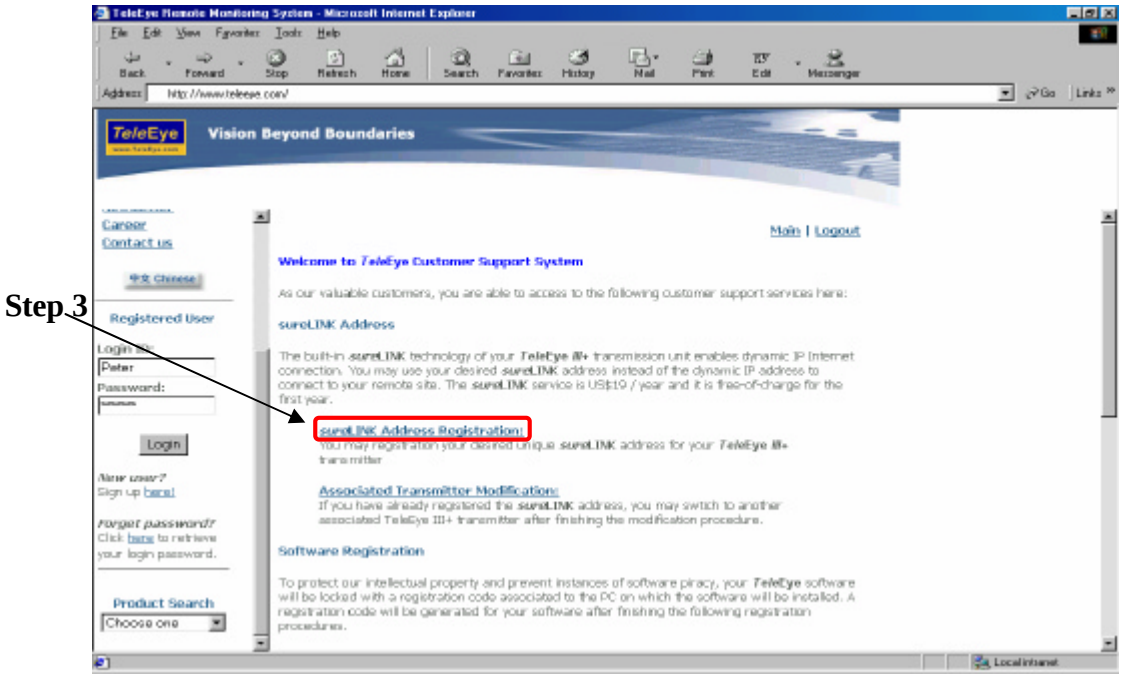
Assigned when the ***Tele*Eye RX** can directly access the Internet without the help of ***Tele*Eye** Proxy Server

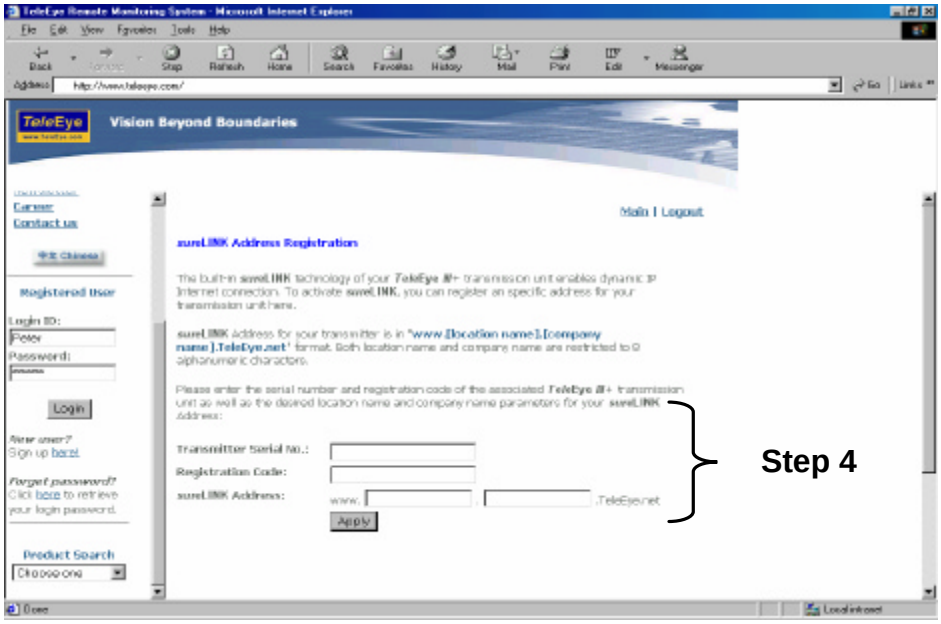
How to Apply for *sure*LINK Address

You can apply for ***sure*LINK** by visiting our web site at *http://www.TeleEye.com*

Step 1

1. Sign up to create your user account
2. Login the page using your registered name and password.
3. Click ***sure*LINK Address Registration** button





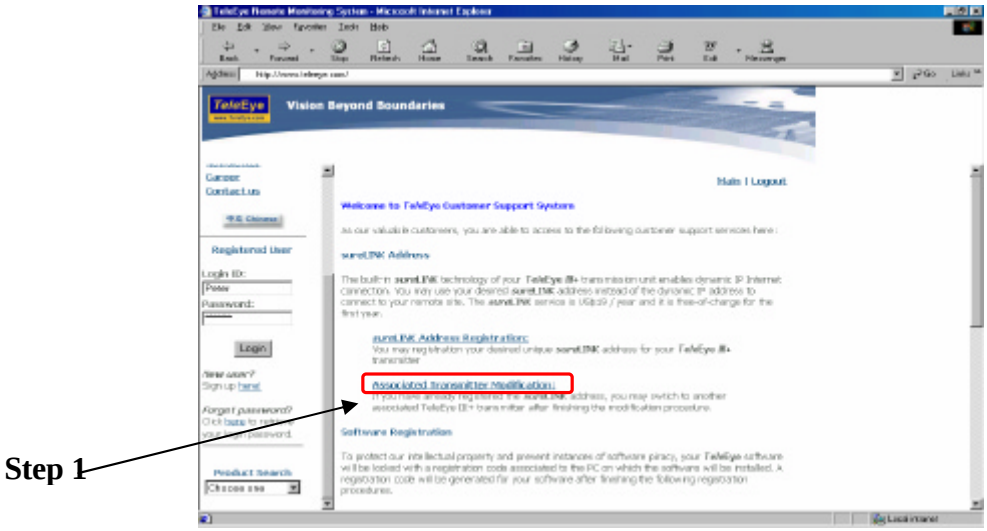
4. Enter a ***sure*LINK** address (**Domain Name)**, your ***Tele*Eye RX Serial No.** and **Registration Code** in the fields provided respectively. Then click the **Apply** button. The process is then completed.

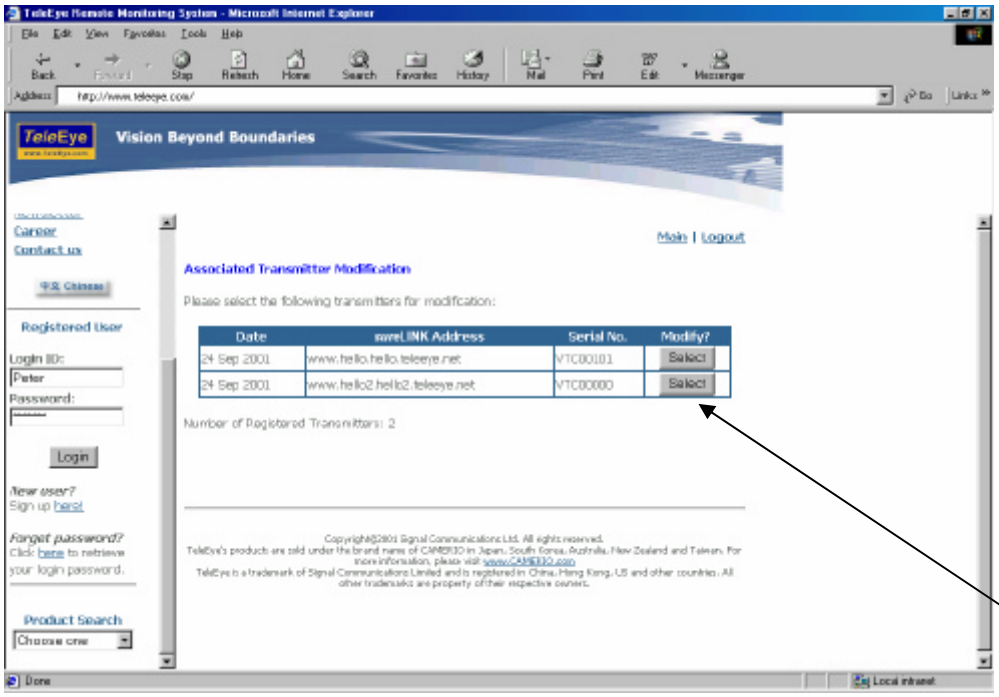
After we receive your domain name registration for your ***Tele*Eye RX**, your application will be processed. Normally, it requires about 2 to 3 working days to activate ***sure*LINK** for your ***Tele*Eye RX**. You will receive a notification e-mail when your ***sure*LINK** service is ready.

Video Server Modification

Since the ***sure*LINK** (Domain name) address corresponds to a single transmitter, if you change from one transmitter to another one, you have to inform us to update our database record. To do this, you can visit our ***Tele*Eye** Product Support again and follow the steps as below:

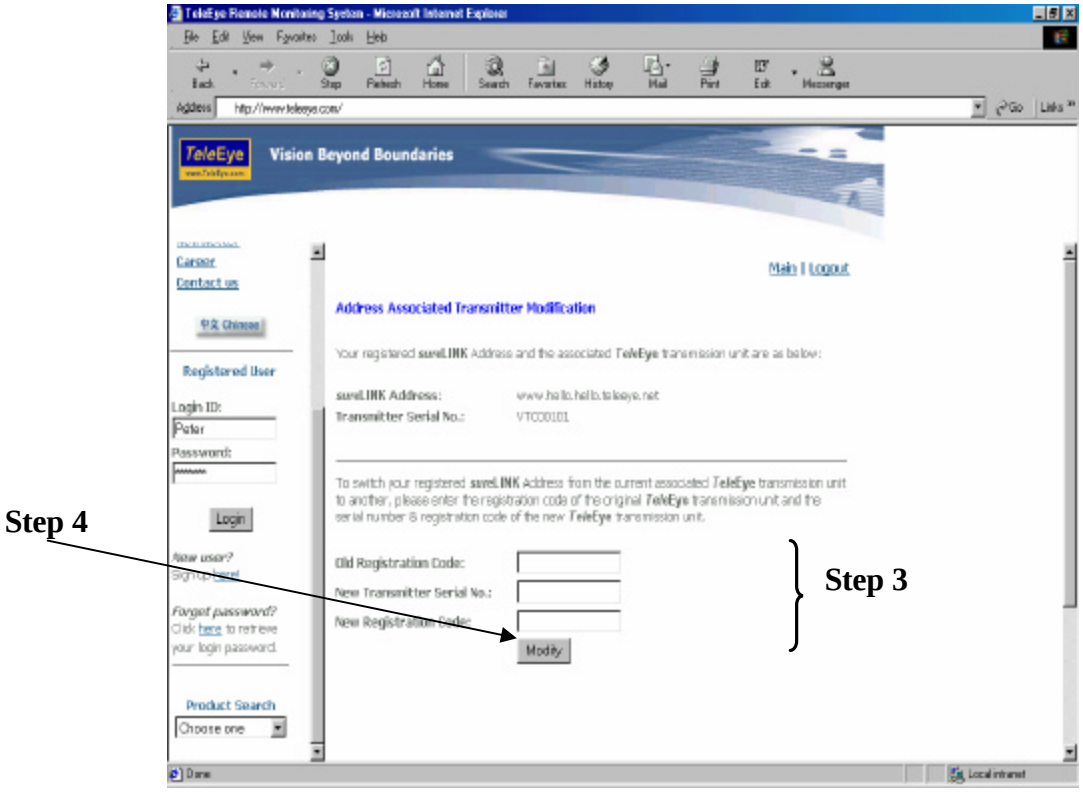
1. Transmitter Modification > Select a ***sure*LINK** address (**Domain Name**) you want to modify





Step 2

2. Enter the **Old Registration Code**, **New Transmitter Serial Number** and **New Registration Code** at each field provided. Click Modify button to submit the form.



Step 4

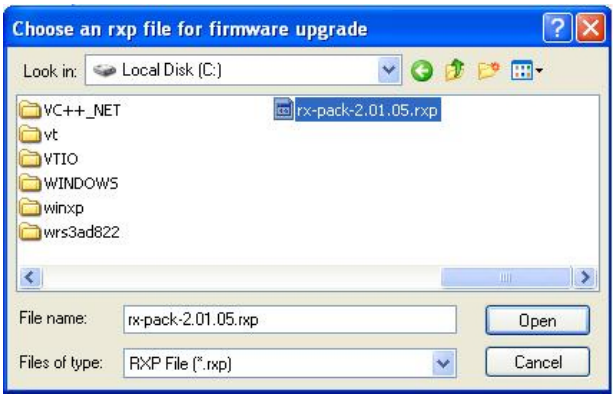
Step 3

If the above procedure is completed successfully, the ***sure*LINK** will be effective immediately.

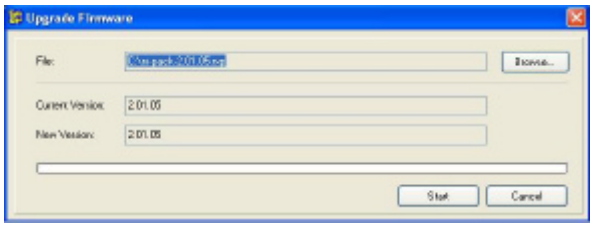
Appendix 3

Firmware Upgrade

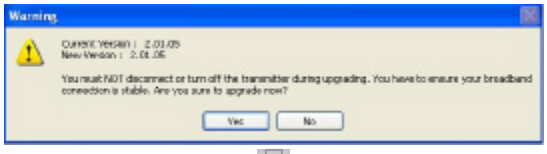
Step 1 : Click Transmitter -> Settings
On **{Transmitter Information}** panel, click **[Upgrade Firmware]**



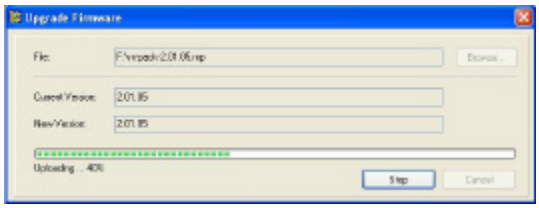
Step 2 : A panel **[Choose an RX file for firmware upgrade]** will pop up.
Choose the rxp file and click **[Open]**.



Step 3: A panel **[Upgrade Firmware]** will pop up and click **[Start]** to start upgrading.



Step 4: A warning message will pop up, click **[Yes]** to continue



Step 5: Wait until the progress bar became full.
*****Do not close the panel until upgrading finished.***

Appendix 4

Security Mode

On RX504, there are 2 security modes: BASIC and ADVANCED. User can either choose BASIC security mode for simple usage or ADVANCED security mode for multiple user accounts and flexible access right. The comparison of the security modes can be found in the following table:

Description		Basic Security Mode	Advanced Security Mode
Number of account		2	20
Account apply on		reception software	reception software and local OSD
Password length		6	4 – 10
Password encryption		No	Yes
Login	Reception software	Only password	User name and password
	Local menu	- -	Only password
Access right		Operation System setting	Video monitoring Audio monitoring and PA Playback Camera Control Event Control Switch Control Video backup Recording System setting User account

- 6 concurrent users in both security modes

Basic security mode -- User account

ADMINISTRATOR

Type	Default	Remark
User name	ADMINISTRATOR	FIXED
Access right	Operation and System setting	FIXED
Network password	000000	Available to change

USER

Type	Default	Remark
User name	USER	FIXED
Access right	Operation	FIXED
Network password	123456	Available to change

Basic security mode -- Access right

Group	Features Involved
Operation	Video/audio monitoring, PTZ, Playback, Switch control
System setting	Start/stop recording, Video backup, System setting, Restart transmitter Firmware upgrade

Advanced security mode -- User account

Account structure

Type	Description	Remark
General setting		
User name	Login user name from remote software	4-16 characters case insensitive unique between each account
Account type	LOCAL / NETWORK / BOTH	allow user to login from local OSD / remote software / both
Access right	Access right of the user account	(Access right)
Network account type setting		
Network password	Login password from remote software	4-10 characters case insensitive

In factory default, 2 preset accounts: ADMINISTRATOR and USER1 are stored in the transmitter.

Administrator account: ADMINISTRATOR**

Type	Default	Remark
User name	ADMINISTRATOR	FIXED
Account type	BOTH	FIXED
Access right	ALL	FIXED
Network password	000000	Available to change
Local password	111111	Available to change
Local time out	15 MINS	Available to change

**Administrator account cannot be removed

Normal account: USER1

Type	Default	Remark
User name	USER1	FIXED
Account type	BOTH	Available to change
Access right	VIDEO MONITORING	Available to change
Network password	123456	Available to change
Local password	123456	Available to change
Local time out	15 MINS	Available to change

Advanced security mode -- Access right

Group	Features Involved
VIDEO MONITORING[#]	basic video monitoring with fixed cameras browsing the event status**
AUDIO MONITORING and PA	audio monitoring** PA with microphone, PA with pre-recorded voice clips
PLAYBACK	video playback** browsing event logs , connection log, setting log and operation log
CAMERA CONTROL	PTZ**
EVENT CTRL	clear event
SWITCH CONTROL	switch control
{All video monitoring}, {audio monitoring} & {playback} access right group will be enabled	
VIDEO BACKUP[1]	video extraction and backup
RECORDING[1]	start/stop recording start/stop schedule recording
SYSTEM SETTING[1]	video format, camera installation, throughput control setting change live video quality, brightness, contrast network and modem setting data/time setting hard-disk formatting recording setting switch setting event setting firmware upgrade shutdown/restart
All access right group will be enabled	
USER ACCOUNT[2]	setting import/export user account setting switch transmitter security mode restore factory setting

at least one camera should be selected

** Video monitoring dependence. For example, if user has no access right on camera 2 monitoring, he cannot browse event status, control PTZ and playback on this camera.

[1] Automatic enable all video monitoring, audio monitoring and playback permission

[2] Automatic enable all access right permission

Appendix 5

Specification

MODEL	RX504
	VIDEO INPUT
STANDARD	(P): PAL/CCIR, 625 lines, 25 frames per second (N): NTSC/EIA, 525 lines, 30 frames per second composite video, 1 Vp-p, BNC
NO. OF CHANNELS	4
	VIDEO OUTPUT
STANDARD	(P): PAL/CCIR, 625 lines, 25 frames per second (N): NTSC/EIA, 525 lines, 30 frames per second composite video, 1 Vp-p, BNC
NO. OF CHANNELS	1
DISPLAY SCREEN	Full, Quad
DISPLAY FRAME RATE	25/30fps D1, 100/120fps CIF
	RECORDING
MODE	Manual, event-driven
HD TYPE	2.5 Inch IDE interface
MAX. RECORDING RATE	(P) : 25fps at 720 X 576 pixels; 100fps at 360 X 288 pixels (N) : 30fps at 720 X 480 pixels; 120fps at 360 X 240 pixels
PLAYBACK	Forward, Backward, Pause, Step Forward, Step Backward, x10 Fast Forward, x100 Fast Forward
	COMMUNICATION
NETWORK	RJ-45, 10/100 Base-T Ethernet (auto-sensing)
MAX. TRANSMISSION FRAME RATE	25/30fps D1, 50/60fps CIF
VIDEO COMPRESSION	SMAC-M
USB	USB 2.0, 12Mbps
WIRELESS COMMUNICATION	HSDPA, UMTS, EDGE, GPRS, IEEE 802.11b / 802.11g
	EVENT HANDLING
EVENT TYPE	External alarm, tamper, video motion detection, video loss, disk full, power interruption, system fail, disk usage, overheat
ACTION TYPE	Live camera, buzzer, dial back, recording, relay control, PTZ, email notification, SMS
EXTERNAL ALARM INPUTS	16 x NC/NO

	RELAY SWITCH
NO. OF CHANNELS	4
MAX. RATING	24V AC, 1000mA
	POWER
VOLTAGE	10-24V DC (12V typical)
MAX. RATING	15W
	OPERATING ENVIRONMENT
AMBIENT TEMPERATURE	5°C - 40°C
RELATIVE HUMIDITY	< 85% (no condensation)
	MECHANICAL DESIGN
DIMENSION	295mm (L) x 227mm(W) x 100mm (H)
NET WEIGHT	2.68kg